



1/11

```

      10                               30
atgacgactgaaccgcttatttttcaagcctgttttcaaagaaagaatt
M T T E P L F F K P V F K E R I

      50                               70                               90
tggggcggggaccgcttttagctgattttggctataaccattccgtcacaa
W G G T A L A D F G Y T I P S Q

      110                               130
cgaacagggggagtgcctgggcttttgcgcgcacatcaaaatgggtcaaagc
R T G E C W A F A A H Q N G Q S

      150                               170                               190
gttgttcaaaacggaatgtataaggggttcacgctcagcgaattatgg
V V Q N G M Y K G F T L S E L W

      210                               230
gaacatcacagacattttattcggacagcttgaaggggaccggttttcct
E H H R H L F G Q L E G D R F P

      250                               270                               2
ctgcttacaaaaatattagatgctgaccaggacttatctgttcagggtg
L L T K I L D A D Q D L S V Q V

      90                               310                               330
catccgaatgatgaatatgccaacatacatgaaaacgggtgagcttgga
H P N D E Y A N I H E N G E L G

      350                               370
aaaacagaatgctggtacattattgattgccaaaaagatgccgagatt
K T E C W Y I I D C Q K D A E I

      390                               410                               430
atztatggccacaatgcaacaacaaaggaagaactaactaccatgata
I Y G H N A T T K E E L T T M I

      450                               470
gagcgtggagaatgggatgagctcttgcgccgtgtaaagggtaaagccg
E R G E W D E L L R R V K V K P

      490                               510                               5
ggggattttttctatgtgccaaagcggtactgttcatgcgattggaaaa
G D F F Y V P S G T V H A I G K

      30                               550                               570
ggaattcttgctttggagacgcagcagaactcagacacaacctacaga
G I L A L E T Q Q N S D T T Y R

```

FIG. 1A





2 / 11

590 610
ttatatgattatgaccgaaaagatgcagaaggcaagctgcgcgagctt
L Y D Y D R K D A E G K L R E L

630 650 670
catctgaaaaagagcattgaagtgatagagggtcccgtctattccagaa
H L K K S I E V I E V P S I P E

690 710
cggcatacagttcaccatgaacaaattgaggatttgcttacaacgaca
R H T V H H E Q I E D L L T T T

730 750 7
ttgattgaatgcgcttacttttcggtgggggaaatggaacttatcagga
L I E C A Y F S V G K W N L S G

70 790 810
tcagcaagcttaaagcagcaaaaaccattccttcttatcagtggtgatt
S A S L K Q Q K P F L L I S V I

830 850
gaaggggagggccggtatgatctctggtgagtatgtctatcctttcaaa
E G E G R M I S G E Y V Y P F K

870 890 910
aaaggagatcatatgttgctgccttacgggtcttgagagaatttaaactc
K G D H M L L P Y G L G E F K L

930
gaaggatatgcagaatgtatcgtctcccatctg
E G Y A E C I V S H L

FIG. 1B





3 / 11

papa_carpa.p VLNDGDVNIPEYVDWRQKGAVTPVKNQSGCSCWAFSAVVTIEGIIKIRTGNLNEYSE
QE
↓ 130 140 150 160 170 180

| | | | | : : : : : : | : :

: |
YJDE PLFFKPVFKERIWGGTALADFGYTIPSTQRTGECWAFAAHQNSVVQ--NGMYKGFTL
SE ↑ 10 20 30 40 50 60

190 200 210 220 230 240
papa_carpa.p LLDCCRYSYGCNGG--YPWSALQLVAQYGIHYRNTYPEGVQRYCRSREKGPYAAKTD
GV

| : | : | | : | : | : : | : : | : | : | : | : | :
YJDE LWEHHRHLFGQLEGDRFPLLTCKILDADQDLSVQ-VHPND---EYANIHENGELG-KTE
CW 70 80 90 100 110

250 260 270 280 290 ↓ ↓
papa_carpa.p RQVQPYNEGALLY---SIANQPVSVVLEAAGKDFQLYR----GGIFVGPCGNKVDHA
VA
: : : : : | : : : : : | : | : | : | : | : | :

|
YJDE YIIDCQKDAEIIYGHNATTKEELTMIERGEWDELLRRVKVPGDFFVPSGT-----
VH 120 130 140 150 160 170

300 310 320 330 340
papa_carpa.p AVGYGPNYILIKNSWGTGWGENGYIRIKRGTGNSYGVCGLYTSSFYVPKN
| : |

YJDE AIGKGILALETQNSDTTYRLYDRKDAEGKRELHLKKSIEVIEVPSIPERHTVHH
EQ 180 190 200 210 220 230

FIG.-2

+

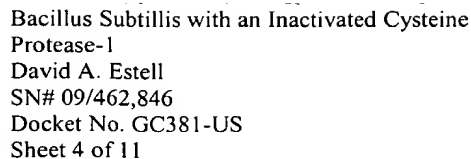
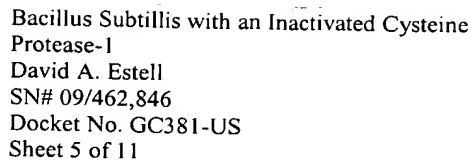


FIG. 3A

59	10	20	30	40	50
yyjde.pep	MTTEPLFFKPVFKERIWGGTALAD-FGYTIPQSORTGECWAF [↓] AHQNGQSVVQNGMYKG				
FT	: : : : : : :				
	MTQSPIFLTPVFKEKIWGGTALRDRFGYSIPSESTGECW [↑] SAHPKGPSTVANGPYKG				
PMI	10	20	30	40	50
KT					
60	60	70	80	90	100 110 1
19	LSELWEHRRHLFGQLEGDRFPLLTKILDADQDLSVQVHPNDEYANIHENGE [↑] LKTECW				
yyjde.pep	: : : : : : : : : :				
YI	LIELWEEHREVFGGVEGDRFPLLTKLLDVKEDTSIKVHPDDYYAGENE [↑] EGLKTECW				
PMI	70	80	90	100	110 1
YI					
20	120	130	140	150	160 170 1
79	IDCQKDAEIIYGHNAT [↓] TKHEELTTMIERGEWDELLRRVKVKPGDFFYVPSGTVHAIGKG				
yyjde.pep	: : : : : : : : :				
IL					
	IDCKENAEIIYGH [↑] TARSKTELVTMINSGDWEGLLRRRIKIKPGDFFYVPSGTLHALCKG				
PMI	130	140	150	160	170 1
AL					
80					

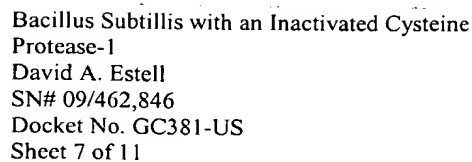


```

300      310
yyjde.pep  GEFKLEGYAEICIVSHL
           :! ::! !!!!!
PMI        PDETIKGTCTLIIVSHI
           310

```

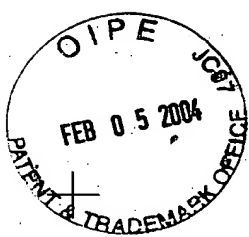
FIG. 3B



7 / 11

FIG. 4B

+



8 / 11

```

      10                               30
atgacgcattccattatTTTTtagagcctgtctTTTaaagaaagactatgg
M T H P L F L E P V F K E R L W

      50                               70                               90
ggaggggacgaagcttcgtgacgctTTTggctacgcaataccctcacaa
G G T K L R D A F G Y A I P S Q

      110                               130
aaaacagggtgagtgcTgggcccgtttctgcacatgcccattggctcgtcg
K T G E C W A V S A H A H G S S

      150                               170                               190
tctgtaaaaaaatggcccgctggcaggaaagacacttgatcaagtatgg
S V K N G P L A G K T L D Q V W

      210                               230
aaagatcatccagagatatccgggtttccggatggtaagggtgtttccg
K D H P E I F G F P D G K V F P

      250                               270                               2
ctgctgggtaaagctgctggacgccaatatggatctctccgtgcaagtc
L L V K L L D A N M D L S V Q V

      90                               310                               330
catcctgatgatgattatgcaaaaactgcacgaaaatggcgaccttggt
H P D D D Y A K L H E N G D L G

      350                               370
aaaacgggagtgcTgggtatatcattgattgcaaagatgacgccgaacta
K T E C W Y I I D C K D D A E L

      390                               410                               430
attttgggacatcatgcaagcacaaaggaagagttcaaacaacgaata
I L G H H A S T K E E F K Q R I

      450                               470
gaaagcgggtgattggaacgggctgctgaggcgaatcaaaatcaagcca
E S G D W N G L L R R I K I K P

      490                               510                               5
ggagatttcttttatgtgccaagcggtacactccatgcttttatgtaag
G D F F Y V P S G T L H A L C K

      30                               550                               570
ggaacccttgTccttgaaatccagcaaaaactctgataacaacatatcgc
G T L V L E I Q Q N S D T T Y R

```

FIG. 5A

+



9/11

590 610
gtatacgattatgaccgctgtaatgaccagggccaaaaagaactctt
V Y D Y D R C N D Q G Q K R T L

630 650 670
catatagaaaaagccatggaagtcataacgataccgcatatcgataaa
H I E K A M E V I T I P H I D K

690 710
gtgcatacacccggaagtaaaagaagttggtaacgctgagatcattggt
V H T P E V K E V G N A E I I V

730 750 7
tatgtgcaatcagattatttctcagtgtacaaatggaagattagcggc
Y V Q S D Y F S V Y K W K I S G

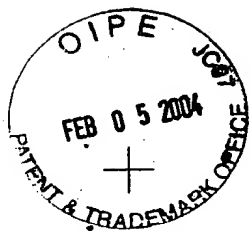
70 790 810
cgagctgcttttcccttcatatcaaacctatttgctggggagtggtctg
R A A F P S Y Q T Y L L G S V L

830 850
agcggatcaggacgaatcataaataatgggtattcagtatgaatgcaat
S G S G R I I N N G I Q Y E C N

870 890 910
gcaggctcacactttattctgcctgcgcatTTTTggagaatttacaata
A G S H F I L P A H F G E F T I

930
gaaggaacatgtgaattcatgatattctcatcct
E G T C E F M I S H P

FIG._5B



10/11

10 30
atgacgcaatcacccgattttttctaacgcctgtgttttaagaaaaaatc
M T Q S P I F L T P V F K E K I

50 70 90
tgggggcggaaccgctttacgagatagatttggatacagtattccttca
W G G T A L R D R F G Y S I P S

110 130
gaatcaacgggggaatgctggggccatttccgctcatccaaaaggaccg
E S T G E C W A I S A H P K G P

150 170 190
agcactgttgcaaattggcccgtataaaggaaagacattgatcgagctt
S T V A N G P Y K G K T L I E L

210 230
tgggaagagcacccgtgaagtattcggcggcgtagagggggatcggttt
W E E H R E V F G G V E G D R F

250 270 2
ccgcttctgacaaagctgctggatgtgaaggaagatacgtcaattaaa
P L L T K L L D V K E D T S I K

90 310 330
gttcaccctgatgattactatgccggagaaaaacgaagagggagaactc
V H P D D Y Y A G E N E E G E L

350 370
ggcaagacggaatgctggtacattatcgactgtaaggaaaacgcagaa
G K T E C W Y I I D C K E N A E

390 410 430
atcatttacgggcatacggcccgctcaaaaaccgaacttgtcacaatg
I I Y G H T A R S K T E L V T M

450 470
atcaacagcgggtgactgggagggcctgctgcgaagaatcaaaaattaaa
I N S G D W E G L L R R I K I K

490 510 5
ccgggtgattttctattatgtgccgagcggaacgctgcacgcattgtgc
P G D F Y Y V P S G T L H A L C

30 550 570
aagggggcccttgtttttagagactcagcaaaattcagatgccacatac
K G A L V L E T Q Q N S D A T Y

FIG. 6A



11 / 11

590 610
cgggtgtacgattatgaccgtcttgatagcaacggaagtccgagagag
R V Y D Y D R L D S N G S P R E

630 650 670
cttcattttgccaaagcgggtcaatgccgccacgggttccccatgtggac
L H F A K A V N A A T V P H V D

690 710
gggtatatagatgaatcgacagaatcaagaaaaggaataaccattaaa
G Y I D E S T E S R K G I T I K

730 750 7
acatttgtccaaggggaatatcttttcgggtttataaatgggacatcaat
T F V Q G E Y F S V Y K W D I N

70 790 810
ggcgaagctgaaatggctcaggatgaatcctttctgatttgcagcgtg
G E A E M A Q D E S F L I C S V

830 850
atagaaggaagcgggtttgctcaagtatgaggacaaaacatgtccgctc
I E G S G L L K Y E D K T C P L

870 890 910
aaaaaagggtgatcactttattttgcccggctcaaagcccgattttacg
K K G D H F I L P A Q M P D F T

930
ataaaaaggaacttgtacccttatcgtgtctcatatt
I K G T C T L I V S H I

FIG._6B

+